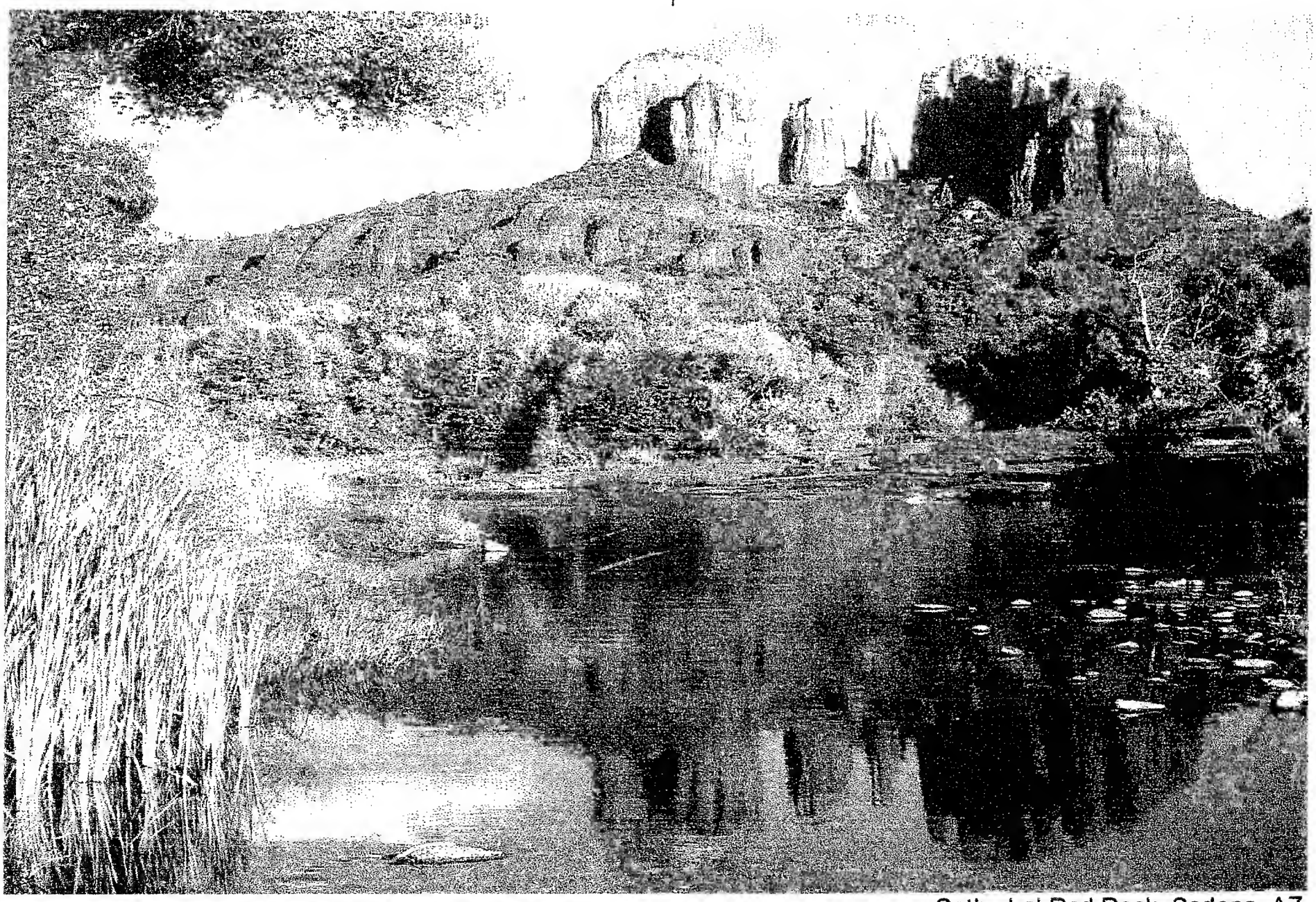
Still Alive With Sir Clive!

ZXir QLive Alive!

The Timex/Sinclair NorthAmerican User Groups Newsletter

Volume 12 No. 1 Spring 2002

MEMORY MAP



Cathedral Red Rock, Sedona, AZ

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Established 1991 The Timex/Sinclair NorthAmerican User Groups Newsletter

T/SNUG Information

We wish to support the following platforms: ZX-80/81, TS-1000, Spectrum, TS-2068, Z88 and QL. If you have any questions about any of these fine Sinclairs, contact the:

Chairman

Chief Motivator
Donald S. Lambert
738 Gunnar Ln.
Forsyth, IL 62535
(217) 875-8043
dslambert@email.msn.com

Vice-Chairmen

Tape & JLO PD Library

Luke Perry
3409 NE 62nd Ave. #187
Vancouver, WA 98661

Z88 Library

Dave Bennett (HATSUG)
1275 Timber View Dr.
Mechanicsburg, PA 17055-9146
717 732-4374
dave975@att.net

QL Hacker's Journal

Timothy Swenson
2455 Medallion Dr.
Union City, CA 94587-1914

TS-2068

Rod Humphreys (VSUG)
10984 Collins Pl.
Delta, BC V4C 7E6 Canada
604 583-2819

QL PD Library

John Donaldson (CATUG)
835 Foxwood Cir.
Geneva, IL 60134-1631
630 232-6147
goodolejohn@avenew.com

AERCO & Z80 Emulator

Keith Watson
41634 Amberly Dr.
Mt. Clemens, MI 48038

--==GATOR==--

Bob Swoger (CATUG)
613 Parkside Cir.
Streamwood, IL 60107-1647
630 837-7957 Work 847 576-8068
ceng108@email.mot.com

ZXir QLive Alive!

Is the newsletter of T/SNUG, the Timex/Sinclair North American User Groups, providing news and software support to the T/S community in a VOLUME of four newsletters per year; beginning with the Spring (March) issue.

T/SNUG's main goal is to preserve and encourage the use of Sinclair computers by providing an open forum for the exchange of knowledge, building and maintaining of software libraries. Providing vendors, repair service and members with free ad space.

It is the user groups and individual subscribers, rather than the vendors, that provide the pecuniary support for this newsletter. Vendors and developers receive this newsletter free of charge, though contribution from vendors and user groups is gratefully accepted. Please support our vendors and service providers whenever possible.

If you have a problem or you have solved a problem, please share it with the rest of us. No problem will be considered unimportant.

Editor/Treasurer/Publisher

You can keep T/SNUG alive by an annual contribution of $14 for one VOLUME made payable to Abed Kahale.

Send check to:-

ABED KAHALE
432 WEST OAKS TRL
WOODSTOCK GA 30188-7358

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Abed Kahale
E-mail: AKahale@juno.com

WEBPAGES

http://users.aol.com/clubbbs/tsnug/
http://www.outlawnet.com/~jboatno4
ql-users@nvg.ntnu.no
www.geocities.com/NESQLUG1/

Trea$ury Note$

As of March 17, 2002, we have a balance of $356

Input/Output

by Abed Kahale

Hello Abed,

I just got the current issue of the newsletter. It looks great as always! I am so very sad to hear of Fred Henn's death. We had corresponded many times regarding Timex computers and he was always very helpful and seemed very genuine. He even wrote me a few times just to see how I was doing. The Timex/Sinclair community has truly lost a great person.

Also, could you please update my email address to doidy1@juno.com. I hardly check my Yahoo account anymore because it is always filled with Spam! I noticed in the letters section that someone was inquiring about some software. I will contact him and see how I can help.

Thanks Abed and I hope all is well with you.

Luke Perry

Dear Abed,

I enjoy every issue of QLive although my near vision does not allow me to use my Timex/Sinclair pieces anymore. Your Winter 2001 issue is testimony that computer basics are still helpful as well as enjoyable. I do miss the programming effort I used to enjoy and the wonderful things (very amazing in fact) that my TS1000/1500 and TS2068 (also two QLs) equipment use to open my eyes and mind. Keep up the good work, Sincerely

Earl Kielglass

(I was a WWII fighter pilot [P47 Thunderbolt]
Tel 480 838-4308)

In a message dated 2/20/02

Carol and Frank Davis were involved in a bad accident Early Sunday morning while leaving town. Condition is bad and they are last known at Intensive Care Unit at Dukes Hospital.

The guy who hit them is not expected to live.

Mike Ingall

Sales manager angelite_prod@lycos.com
FWD Computing

Let me give an update.

It appears that the hospital sent them home much to soon. something having to do with insurance only pre-authorizing so many days and the doctor not wanting to challenge it. They had Frank's sister take them to a doc they know in Kokomo, IN and he had the files faxed over to him from the Duke's Hospital in Peru (where they were treated). Looking thru the files they found that the tests showed the bottom vertebrae crushed on Frank, an MRI needed to check out the next two up from there as they felt they were also damage, the sternum in his chest is cracked, cracked ribs with 4 on the right side and 3 on the left. With Carol, it is 3 vertebrae cracked or partially crushed, neck injuries due to the fact of no air bag on the passenger side, crack ribs on right side, cracked sternum, and Monday being tested for one, if not 2 partially detached retina of her eyes. This doctor sent copies of these reports and sent them, as well as the Davis's to another doctor for checking and he verified the same. Tomorrow is another doc appointment for Frank and Carol on Friday.

When Frank and Carol left the hospital they were not told of any of the possible spinal injuries, or sternums, only that they would probably be a little sore there for a few days and here is a prescription for Hydrocodene for it and that Carol seemed to suddenly have very high blood pressure. So much for medical ethics, and as far as insurance goes...well these days that is a story worse than the bad jokes told about lawyers.

There you have what I know straight from them and Frank's sister who just got back to their house after a less than exciting day of trips to docs.

Mike Ingall

Cards and notes should be sent to:

Frank & Carol Davis
FWD Computing
P.O. Box 17
Mexico, IN 46958

Both Carol and Frank were signed up for a number of computer shows in the upcoming months and asked me to say that they hope to still make it to some of them. They lost (it is still being tallied up for insurance) over $17 thousand in software as well as the Dodge Grand Caravan they usually hauled stuff to shows in, so their will be a few obstacles.

As their sales manager I know they had been signed up for 2 shows they already missed, the AGI Show in Anderson, IN and the LaPort HamFest in Laport, IN. They were next scheduled for an AGI Show in 2 1/2 weeks at Lafayette, IN. At this time that is doubtful, but a very slim chance, as Frank and Carol usually enjoy doing these shows and have many friends at them.

They were also signed up and paid for the Dayton ComputerFest in March and AmigaExpo in Maryland the end of March as well as planning on the CocoFest in May in a place North of Chicago. It

is hoped they will make some of these.
So, go ahead and send cards, notes etc. to the Mexico, IN address. Thanks all,

Mike Ingall

Just a short update.
Carol has been told that she does not have detached retinas in her eyes, but that they were damaged. She is scheduled for re-checks every two months to see if it is permanent. Both are healing, but not as fast as they would like and are in physical therapy 3 days a week.
Both are still being checked by their prospective docs once a week also. Not yet ready to drive.
They may make an appearance at the Dayton ComputerFest next weekend. They have someone to drive them, do the manual labor and take them back to the hotel if too tired out or in too much discomfort. This is not for certain. Guess they just hate to give up. Still needs doc approval.
If they do not make it their they are still wanting to make the Amiga Exp02002 in Maryland a few weeks after that. Wish them luck. they have appreciated hearing of well wishes for them as well as cards and flowers, etc. Thanks.

Mike Ingall

In a message dated 3/13/02

Looks like me and my van are carrying Frank and Carol to Dayton. So, they will be there. They are both moving better but a little sore from the physical therapy.

Paul Holmgren
paulholm@ameritech.net

QL Show

EINDHOVEN - Saturday 23rd March 10:00 - 16:00
Plein College St Joris, Roostenlaan 296
The Netherlands
Motorway A2, N69 junction (opposite the zoo)
Tel: +31 40-2442309 (Sjef vdM)

This is possibly now the longest standing QL show venue, and despite scares, the venue is guaranteed for the next three years. **Peter Graf** is planning to attend. Some QL traders will be staying (as usual) at the Eindhoven Hotel (was Motel), and visiting a very cheap local Chinese buffet (eat all you can) after the show. Map:
<URL:http://www.map24.de/map24/?street0=roosteplaan&zip0=&city0=eindhoven&country0=nl&gcf=1&maptype=JAVA&x=13&y=4>

Roostenlaan runs N/S and the junction with Florenlaan is marked at the center of the map. St Joris College is 200m South of this junction on the right opposite the zoo. The approach from the A2 (via N69) is North up Aalsterweg past the Eindhoven Hotel, turn right onto Vesaliuslaan and right onto Roostenlaan.

I will have my usual selection of new QL hardware (Minerva, I2C interfaces, Hermes, SuperHermes, Mplane, ROMDisk etc) and second hand hardware/books. I also have QL colour monitors.

I will also bring my expertise and spare/tools, so bring your broken QLs etc for repair. I am also building a disk drive outfit for someone, so will have quite a bit of disk drive hardware.

http://www.firshman.demon.co.uk
http://www.qbranch.demon.co.uk

Linedesign Clipart CD - A full CD of the finest clipart ever produced for the QL. Over 600 Megabytes of Data, and literally hundreds of files, crammed onto just one CD. They are in LineDesign formats, and a wide variety of topics - national flags, star signs, business clipart, humorous clipart, all of which are ideal for work or fun - perfect for designing that church flyer or committee newsletter. RRP £15, Show Price just £12.

Interactive Fantasy CD - The work of Phoebus Dokos, this is a great CD for the Adventure Gamer, and contains hundreds of INFOCOM adventure games, approx 150Mb of them, ported over from the PC. Includes the full ZIP interpreter with which to play them, and instructions. Lifetime updates are available FREE via email from Phoebus - ask for details. SPECIAL PRICE :- £10

The Zexcel Spectrum Emulator CD - A CD based on the popular ZX Spectrum Computer emulator for the QL by Ergon in Italy- play all your old Spectrum favourites on your QL - thousands of Spectrum Games are included, inc. The classic Jet Set Willy and Manic Miner, and even Utility Programs, Word processors, Desktop Publishing etc. The latest version of ZeXcel for the QL is also included - months of fun for only £10 !!

World Of Z88 CD - The work of Andy Davis of Alchemist Research fame. A new Collection of programs for the Cambridge Z88 Computer - almost 2,000 files, including MS-DOS and Windows Z88 Emulators, EPROM Images, Games, Utilities, the Z88 User Library, Sourcebook, Photographs, press cuttings, and old adverts from the Z88 past. Available now for Just £8!

mailto: tony@firshman.demon.co.uk
http://www.firshman.demon.co.uk
Voice: +44(0)1442-828254 Fax:+44(0)1442-828255

TF Services
29 Longfield Road
Tring, Herts, HP23 4DG
United Kingdom

Section 3

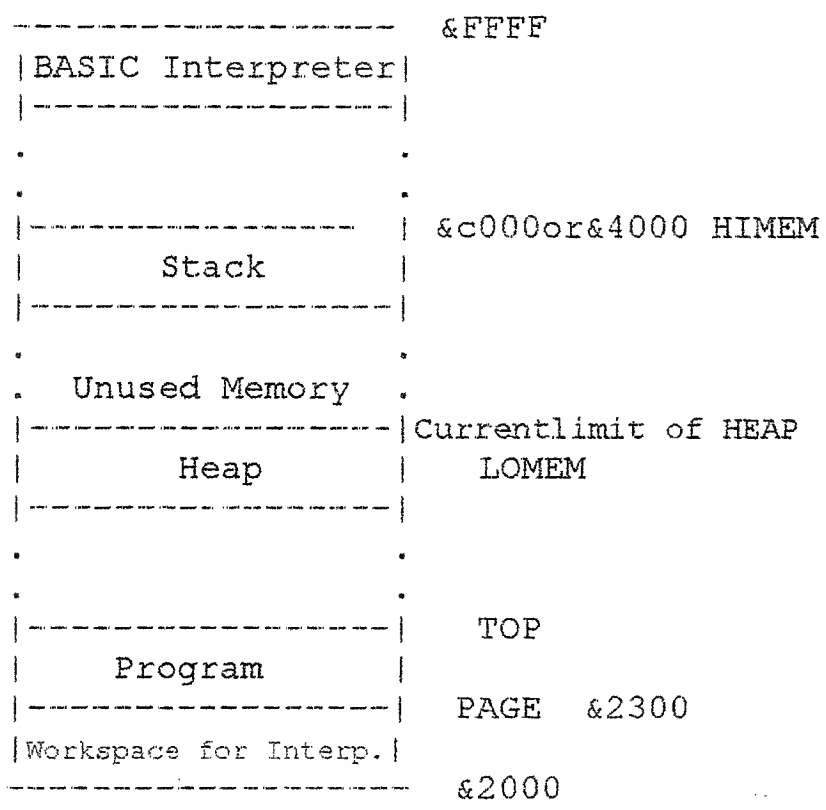
TECHNICAL SPECIFICATIONS

Memory Organization

The Z88 is based on a Z80 processor running at 3.2876 MHz. The Z80 has a 16-bit address buss and can directly address 64K of memory. The Z88 can use up to 4Meg of memory by having 256 banks of 16K. The Z88 can address 4 such banks at one time. The 64K logical address space is divided into the following 4 16K segments:

Segment 0: Logical addresses &0000 - &3FFF
Segment 1: Logical addresses &4000 - &7FFF
Segment 2: Logical addresses &8000 - &BFFF
Segment 3: Logical addresses &C000 - &FFFF

BASIC's program workspace is arranged in the following manner:



Memory	Page#'s	What	Max	Used
00 -1F		Internal ROM	512K	128K
20 -3F		Internal RAM	512K	32K
40 -7F		Slot 1	1024K	
80 -BF		Slot 2	1024K	
C0 -FF		Slot 3	1024K	

When a Z88 has 128K or more RAM it becomes an expanded machine.

Below are the differences between an expanded and unexpanded machine.

Property	Expanded	Unexpanded
Size of BASIC	40K	8K
Max Map Width	256 pixels	80 pixels
User Chars	64	16
Value of EOF	1	0

Putting RAM in Slot 2 or 3 does not expand the machine (only 8K for BASIC) but does increase memory size. The unexpanded machine can use 64 user characters, but if an 80 pixel map is used the last 48 of these will be overwritten by map information when PipeDream is used. Reducing the map width to 64 pixels, or not using the map at all allows for free use of all 64 user characters.

EPROMS

One key note about EPROMs that I ran across that is fairly important to note: when putting (blowing) files on an EPROM energy consumption is actually less than when you are regularly using the Z88. The extra power needed to blow the EPROM is balanced by the fact that the screen is shutdown when blowing the EPROM. Most people felt that blowing EPROMs was a battery draining effort.

Devices

These devices are listed in the User Manual, but they are kind of hidden. This is a good place to bring them up again.

:INP.0 the keyboard
:OUT.0 the screen
:ROM.0 the 128K ROM built in
:COM.0 serial port
:PRT.0 serial port (output only)
:NUL.0 unknown

To see the list of all devices on the Z88 (including additional RAM), in Filer select Catalogue Files and give a file name of :*/ . Use a file name of :ROM.0//* to see what appears to be a list of Z88 applications. Even though the use of :NUL.0 is unknown, I'll guess that it is similar in usage to the Unix device known as /dev/null. /dev/null is a device to send all your unwanted output to the proverbial bit bucket. If a program provides output that you don't need, you can redirect it to /dev/null and it will never appear.

Z88 Internals

If you were to open up your Z88 (don't do this lightly), here is what you would see:

There are four chips in the Z88. From left to right they are:

128K ROM - 32K RAM

ULA - Uncommitted Logic Array. This chip is a specially made chip for the Z88. It replaces a number of stock chips. Sinclair/Cambridge is known for having ULA chips in virtually every computer.

Z80 CPU - This is a CMOS version for the Z88 that uses less power than a regular Z80.

Next to the **ROM** chip is the Supercap Capacitor. This is the power reservoir when changing the batteries. Below the expansion port is the speaker (see the small ring of holes on the back of the computer). Next to the ULA are the two eight-way keyboard connectors into which go the

ribbon cables from the keyboard. Unlike the membrane keyboard of the Spectrum, ZX81 and the QL, the plastic molded keyboard actually conducts electricity and makes the electrical connection. Below the keyboard connectors are the two crystals used for timing.

AC Power Supply

The Z88 has a plug-in for an external AC adapter. When the adapter is plugged in, power is taken from it and not the batteries.

The specifications for the adapter are:

6 Volts DC
300 - 500 milliamps
Positive center

Most Radio Shack stores or other electronic stores should carry such an adapter. The one that I use is a universal adapter. It lets me switch the voltage and the polarity. It also has 4 different plugs. Radio Shack has two adapters that will work with the Z88. The Universal AC adapter (#23-1635HT) plugs into an AC wall outlet. The Universal DC adapter (#270-1560HT) fits into your car lighter socket and allows you to externally power your Z88 while you ride in a car (I don't recommend doing much with the Z88 while you drive :-)). If you need the DC adapter to reach further there is a 10 ft 12VDC extension cord (#270-1536HT). Even with the car turned off, the Z88 should not be too much of a drain on the car battery.

Batteries

Some have suggested using rechargeable batteries in the Z88. The standard NiCad batteries do not put out enough umph to keep the Z88 up and going for too long.

One partial solution was to use 2 regular AA batteries and three special 1/2 AA rechargeable batteries from Sanyo. They would put out a total of 6.2 Volts, just over the 6 volts of new batteries. Some adapters are needed to make the ½ AA batteries fit into a recharger. Spacers with 90 Ohm resistors were made to fit batteries into the recharger. This is detailed in the first issue of PipeLine, the Z88 magazine put out for a short time by Tim Woods.

There is a new type of rechargable alkaline battery available called RayOvac Renewal. These are real alkaline batteries that can be fully charged up to 25 times. They will give you the full power you need, better than NiCad batteries. I've never used them, but I'm sure they are more cost effective than buying new batteries all the time.

The external AC adapter port on the Z88 is designed to take 6 volts, just like it gets from the 4 AA batteries. This means that almost any 6 volt power source could be hooked up to the Z88. This includes such sources as a 6 volt Gel Cell, a pack of 4 1.5 volt D cells (see next section), or even a solar cell that generates 6 volts. The electrically inclined can work up almost any device.

Z88 External Battery Box

As mentioned above, an external battery pack can be made for the Z88. I have built such a pack using 4 D cells. I could have used a large rechargeable 6 volt cell, but I wanted to keep to using standard batteries. To get the 6 volts for the Z88, all I needed was 4 1.5 volt batteries. Most standard batteries (A, AA, C, D) are 1.5 volts. I went with D cells because they were about the biggest I could get and did not cost that much more than C cells.

After looking at various electronic surplus places, I found that good old Radio Shack had exactly what I needed. Basically I needed a battery holder, a box to keep it in, and an adapter plug to fit the Z88. Below is the parts list for this project:

270-627 Experimenter Box (6.25"x3.75"x2")
270-396 D Battery Holder (6 Volt)
274-1569A Coaxial DC Power Plug (male) 5.5mm OD
2 Lead wire (same gauge as on an AC adapter)
3/8" thick Foam Rubber
4 Screws
4 Rubber Feet

The battery holder does not fit square in the box it fits in at a slight angle. The box is plastic with a metal cover. I wanted to call the metal cover the bottom. Since it would be easier to mount the plastic battery holder on the plastic box than the metal plate, I mounted the battery holder upside down in the box with plastic model cement (use lots).

To let the lead wires out, I drilled a small hole near the top of one end of the box. (Since I put this all together upside down, it looked like I drilled near the bottom of the box.)

The two wires coming from the battery holder are not long enough to reach out of the box, so I ran the other wire into the box and attached it to the battery wires. To make a good connection, I twisted the wires together, put some solder on the joint, and wrapped them with electrical tape. To keep the wire from being pulled out of the case, I wrapped some electrical tape on the 2 lead wire so it would not allow the wire to be pulled through the hole.

The length of the lead coming from the box to the plug can be as long as you want. I went with a fairly long lead about 20 inches. I connected the plug to the other end of the 2 lead wire. The Z88 requires that the inner part of the plug is positive (be sure to get this right or you might blow your Z88). It would be useful to use 2 lead wire with one lead marked (usually with a painted stripe down it's length). The positive lead coming from the battery holder is the red one. I soldered the wires on and then ran some electrical tape around between the two connecting points. I wanted to make sure that I did not get a short in the system.

Once I had this all hooked up I put the batteries in the holder and, using a multimeter, checked to make sure that I was getting 6 volts on the plug. Since the batteries were fresh, I was actually getting about 6.5 volts.

I did not want the batteries to fall out, especially since they were going to be hanging upside down, so I put in some foam rubber to support the batteries and the battery holder. I did not glue the rubber to the metal cover, since some glue will eat foam rubber, plus I did not feel a need to have the rubber mounted.

The screws stuck out beyond the cover and would

scratch a table surface, so I got some stick-on rubber feet to prevent this. The metal cover is fairly tight and fits the box well. To make it easier to get the lid off, I created a small notch in the cover with a metal file. I did it just big enough to get my fingernail in and be able to pry the cover off.

cells, I'm not too sure. I do know it will be far more economical than using lots of AA's.

Lantern Batteries

I've found two different types of 6 Volt lantern batteries. The first is a square battery about 1.5 inches per side and about 2.5 inches tall. The second is about the same height as the first but about 3.5 inches wide (like a tall brick). These batteries have either little springs or metal poles for the positive or negative leads.

Since they are 6 Volt, they are perfect for the Z88. What is needed to hook them to the Z88 is:
DC Power Plug (same as mentioned above)
2 lead wire (same as mentioned above)
Micro Alligator Clips

Solder the DC power plug to the wire the same as above. Then solder the micro alligator clips to the wire. Be sure to mark which wire is positive and negative. You can buy color coded alligator clamps, but I prefer to mark each wire with some tape and the + and - symbol. This way I don't have to remember that the red lead is positive (or is that negative?). Now just hook the clamps to the battery and plug into the Z88. I have no idea of how many hours you will get out of either battery (I'm guessing its lot's). If you can't find these batteries, try a local camping/outdoor store. They should have them.

CARE OF THE Z88

Cleaning

After having the Z88 a short time, you will probably notice that the keyboard seems to attract dust like a magnet. It's not easy to keep clean. I've heard some discussions on how best to clean it.

Some have suggested using a Q-tip and plain water. I like to use a Q-tip and rubbing alcohol. Others have suggested using a vinyl protectorant like Son-Of-A-Gun or Armor All. I don't know how these will affect the keyboard, so use at your own risk.

Just don't plan on keeping the keyboard clean always. Just a few days after I cleaned mine, it looked like I had never cleaned it.

As for the screen, ideas range from blowing on it, using compressed air, using tissue, and using the same stuff you use to clean a pair of glasses. I find a tissue and some clean water to be good enough.

There was mention of how sunlight affects the Z88. It seems that sunlight heats up the screen and takes more power to make the letters dark. Just blocking the screen from direct sunlight should fix this.

I have no concrete numbers on the temperature range that the Z88 can handle, but I would guess that it should not be allowed to get too hot or too cold. Leaving it in direct sun in a parked car is a definite no-no. I have read that letting a LCD panel get below freezing causes bubbles in the panel and permanently damages the panel. Don't leave your Z88 in the car overnight in the dead of winter.

Total cost for the project (not including batteries and wire) was under 7 dollars. Since I took my time to get everything right, it took me about 1 hour to build the battery box.

Exactly how many hours I will get out of the 4 D

If the keyboard seems a bit sluggish or non-responsive, it could be the fault of the membrane beneath the keyboard being dirty. The entire rubber keyboard can be taken off and cleaned underneath. Do this at your own risk and don't do it during any warranty period.

The Z88 has been known to crash when having a constant pressure on it's keyboard for a long time while it is turned off. I've only experienced this with a Z88 that had other problems, but not my current Z88 (I have not tested it). I've picked up a "Topper" to prevent this from happening (see products below). The "Topper" is a plastic cover that fits over the Z88 and protects the keyboard and screen.

Of course, one of the biggest no-no's with the Z88 is dropping it. I do not know how much shock the Z88 is designed to take, but I doubt it is very much. The screen would probably be the first item to be damaged. LCD screens are fairly fragile and do not take well to being dropped. The motherboard can probably take a fair amount of shock. The biggest worry about the motherboard would be a drop on the edge of the Z88. This might cause some fair amount of cracking in the case and motherboard.

TRAVELING WITH THE Z88

I carry my Z88 as part of my briefcase. With it I carry a few extra items.

Batteries: Since it's hard to tell when the batteries will go out on me, I like to keep a set of fresh batteries around. It is nice to know that I can quickly pick up more batteries if I have to. In reading one book on laptops, one contributor mentioned that traveling with a laptop that used off-the-shelf batteries was better than traveling with a laptop with rechargeable batteries. Most off-the-shelf batteries are available almost anywhere in the world. With rechargeable batteries, you need to have a converter to plug the charger into the local electrical system (which can be quite odd in some countries).

External Battery Pack: Since I sometimes use my modem with the Z88, I often find places where there is room to plug in the modem and a lamp, but not the Z88 AC adapter. The external battery pack is great for this. It is also good to run the Z88 almost anywhere for extended periods of time.

AC Adapter: Since I want to make the batteries last as long as possible, I like to use the AC adapter when I can. Especially if I am using the serial port, as this is one of the major power drains for the Z88.

Cables: I always carry a Z88-PC cable so that I can transfer any documents to/from the Z88 and my PC at work. I never know if I have to use my Z88 to keep meeting notes. Sometimes I carry a serial printer cable just in case I need to use a printer while on the road.

To keep the cables wrapped up fairly small I needed

some cable ties that were reusable. Most cable ties are for single use only so they were out. I made my own cable ties by sewing two pieces of Velcro together, hook on one side and pile on the other. When used, the inside pile will grip the outside hook (or vice versa). My wife's sewing machine could not handle the thick thread and the tough Velcro, so I had to do the sewing by hand. With a little patience I was able to make enough cable ties.

ProComm: Since most places have PCs, I like to carry a copy of ProComm on 5 ¼ and 3 ½ disks. With the cable and software, I have all that I need to transfer documents.

Modem: I use the modem to dial into my Unix system at work with my Z88 so I can read my mail while I'm on the road.

Printer: I have an older Diconix inkjet printer that works with the Z88. Once I get it repaired I plan to carry it with the Z88.

Here are some other items to take into consideration when traveling with the Z88:

❖ Theft of the Z88. The main reason I bought the Z88 was because of it's size and weight. This also means that it can be stolen fairly easily. Don't leave your Z88 just lying around. Besides the physical theft, having your Z88 stolen means that your files go with it, too. You no longer have access to those files, which can be critical if they were important to you. It also means that the thief now has your files. I doubt anyone will be keeping state secrets on a Z88, but this is something to consider.

❖ Lighting. Since the Z88 has no backlit screen you will need a light source wherever you use the Z88. Buying a laptop light will solve this problem.

❖ Airport Security. I keep my Z88 in my brief case when I pass it through airport security. So far no one has asked if I was carrying a laptop. When traveling with another laptop, I was asked to turn it on so they could see that it worked and was not a bomb. Just because I was not asked to turn my Z88 on, don't expect to be so lucky. Be ready to take it out and turn it on. There is also the worry about the X-rays from the scanner zapping the Z88. I've heard from a lot of people that the X-rays are fairly harmless. Your biggest worry is the motors driving the belt in the scanner. But, if you are concerned, take out your Z88 and ask for a hand laptop check. Airport security should be used to this.

EXTERNAL SERIAL DEVICES

If you are taking your Z88 on the road, it would be nice to also have a printer and/or modem. There are a number of portable printers and modems on the market that are designed to work with any laptop with a serial device. There are a couple of good magazines devoted to laptop users, like Portable Office and Mobile Computing, and carry ads for a lot of portable printers and modems. Check your local newsstand or library.

Printers

Most portable printers are battery powered and can be used anywhere. The only one that I've used is the Kodak Diconix ink jet printer. It's printer quality is just a bit better than normal dot matrix. Most portable printers will be of the ink jet type.

For serial printers, a Z88 cable can be made or bought for the Z88 (see the pinouts listed earlier). For parallel printers a serial to parallel cable can also be bought. For QL users, the Miracle Serial to Parallel adapter will also work with the Z88. This adapter is designed to work on either SER1 or SER2 of the QL. Luckily it also works just fine on the Z88. Since I already had this adapter for my QL, I was really happy that it worked with the Z88. One less cable to buy.

If you don't want to carry a portable printer or can't afford one, then there are ways to be able to print while on the road. Carry a serial to parallel cable and a regular serial (9-25 pin) cable so that you can print to almost any printer. If you are staying in a hotel, ask them if they have a printer you can use. You could also carry cables to download the file to a PC and then print out. There are a number of commercial services that offer short term rental of computers and printers. MailBox Etc. and Kinko's usually have self-service computers and printers. Other copier places might have them.

Modems

There are a variety of modems called "pocket" modems. These are modems that plug directly to the serial port and are powered by a 9-volt battery. I have even heard of one that uses the power from the phone lines. Hooking one of these to the Z88 will require a small adapter cable but this need not be too long. There are even some battery powered FAX/modems available. Make sure that you get a plain text Fax modem. Most fax modems require input data be in the form of a CCITT Fax 3 image format. Some fax modems will take plain text, convert it to Fax 3 image format and send it. Check any of the more popular computer magazines for more info on small modems.

Using your modem on the road is getting easier. Some hotel rooms have data jacks built into the phones. For those that don't, the phones are on RJ-11 jacks, instead of being hard wired into the wall. Beware that the phone jacks might be in an out of the way place, like behind the headboard of the bed. Be sure to carry some length of phone wire and a female-female connector so you can hook together two phone lines. Pay phones are starting to have data jacks in them. The newer credit card-only phones should have data jacks. Don't expect the phone in the phone booth to have data jacks. If you plan to use these type of phones, there are some acoustic handsets available that end in an RJ-11 jack.

In some of the "standard" laptop magazines I've read some discussion about hooking up modems to digital phone lines and how they can destroy your modem. When talking about digital phone lines, the topic of PBXs comes up. I don't know the specifics of digital phone lines and exactly why the would zap your modem, but there are a few products on the market that plug into the phone jacks to confirm that they are in fact non-digital and are safe for your modem. These devices are not cheap, so you may want to research it further before buying one of them.

To be Continued

What Alienates the TS-2068

The SCLD (The Standard Cell Logic Device has not been available for years)

By Victor M.S. Acuña - Buenos Aires

Some words about myself. I was a student at CIE (Cleveland Institute of Electronics), in Electronics Engineering course. I worked since 1986 in the computers field, and really I am an expert in repairing TSs.

The topics I send in this letter are about repairing of SCLD IC. Evidently the troubles generator in the TSs is the SCLD IC. In the service shop I encountered about 60% of TS's failures were over it, and like it change cost about $30. (I have many of them, and I did a special iron to remove them), when the price of the machine began to fall, an option was to design circuits specifically to repair parts of it. Now a working TS-2068 cost around $50. The TS repair market, practically doesn't exist. The total number of machines imported to my country was around 5,000.

Principally, the SCLD problems are:

A. No Interrupts (every ~17 ms.) from SCLD to CPU and then **failure**. No keyboard

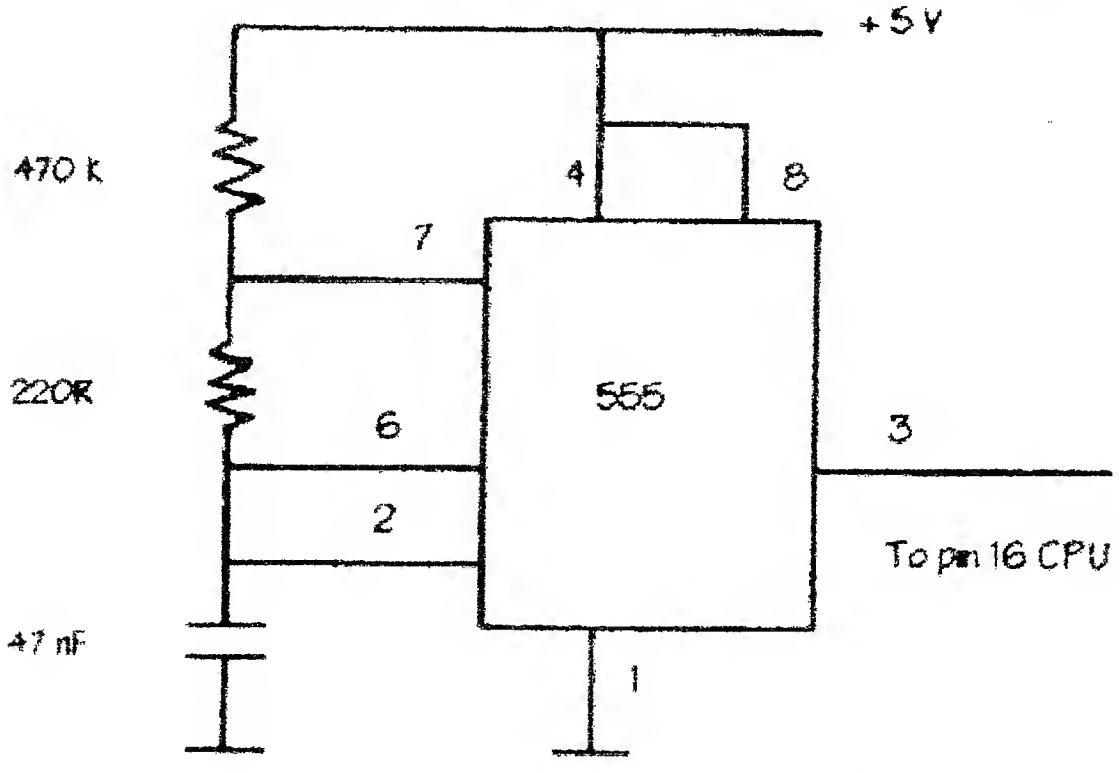
B. One or more rows of keyboard do not work. SCLD does not read or its data lines are **open** .

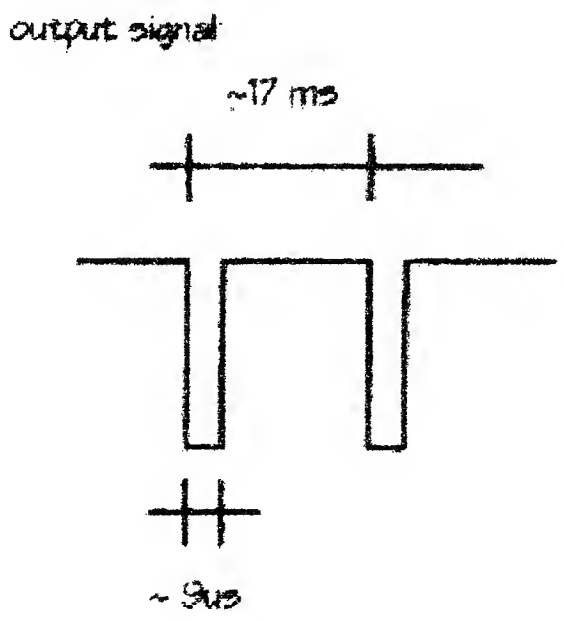
C. No cassette. Does not read data from the cassette player.

D. The refresh circuit built into the SCLD for the high memory bank (32, 768-85, 535) A7R doesn't work. The machine initializes, but the programs crashes. This is the most **destructive** failure, and commonly only reparable by changing the SCLD. Yes, it is my great discovery ! ! Thanks, thanks, ..

Keyboard Problem

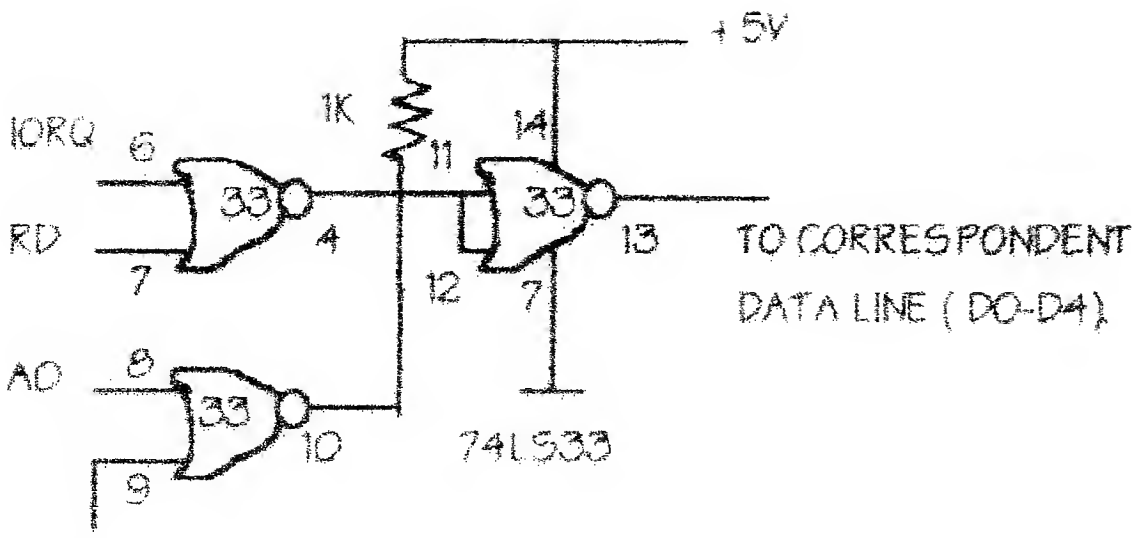
A) The SCLD provides via INT (Pin 16 Z80) signal that is necessary to scan the keyboard. This signal is generated in every field of the screen (1/60th sec.). But if it isn't, the CPU never read the keyboard. More explanations about it are in the Technical Manual. Originally, I tested taking the signal from the vertical synch, but it doesn't work well. Then I designed a circuit from a 555 timer, and it worked O. K . The circuit is:





One Or More Keys Do Not Work

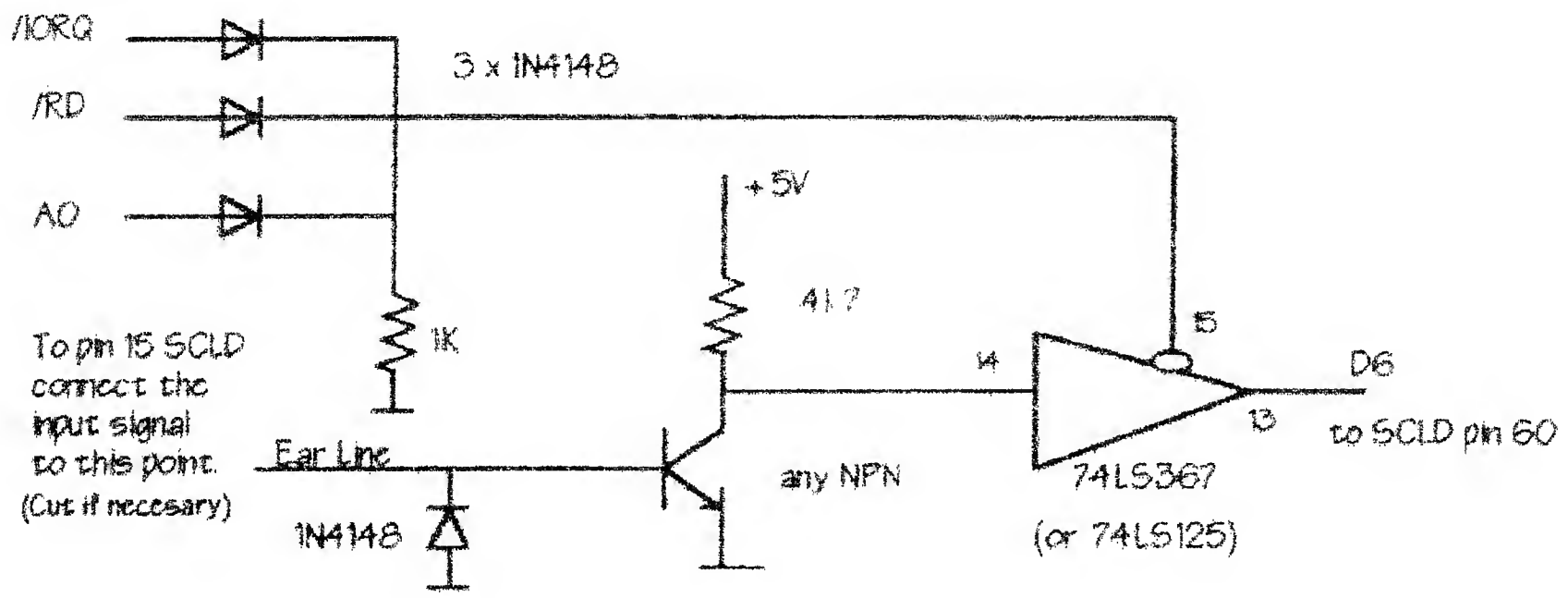
B) If the keyboard fails only in some rows, and one is sure that the problem is in the data lines, (via oscilloscope level test, for example) and not in the keys itself, then the solution is to build a circuit that overlaps the SCLD keyboard circuit. The keyboard uses D0 to D4 to scan the KB0 to KB4 lines, in the port 254 . This corresponds to A0 = 0 . Then the circuit is:



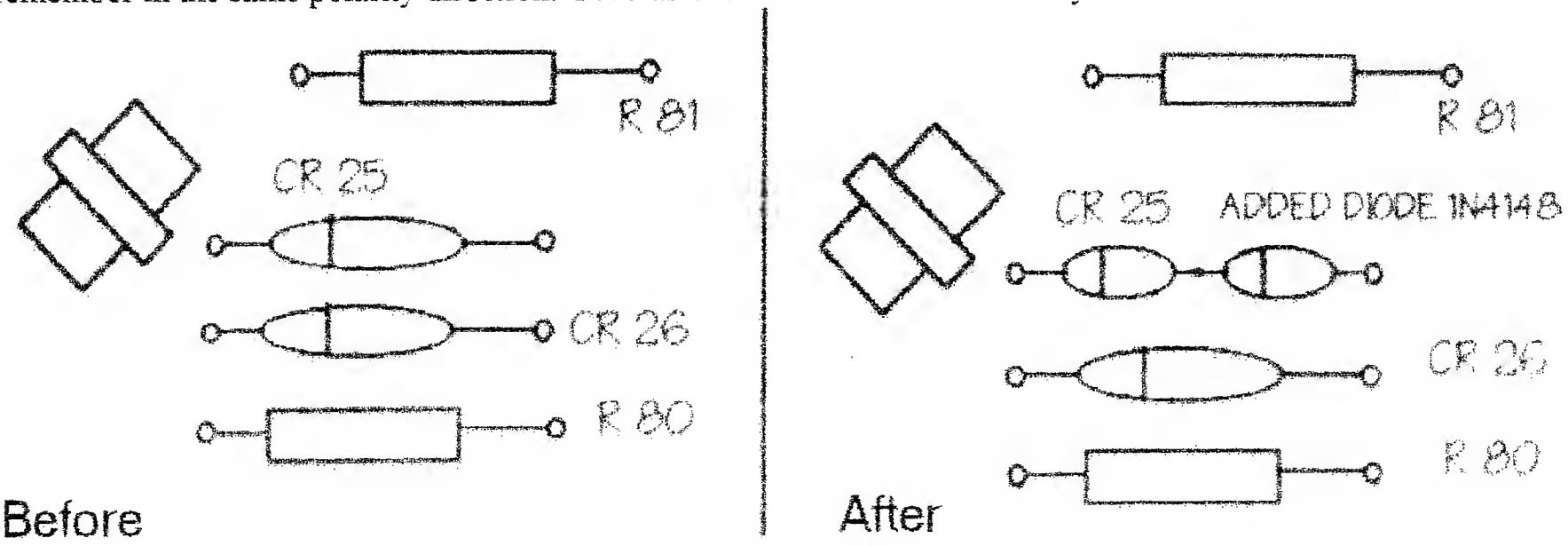
KEYS	COLUMNS	DATA LINES
Brk	- 0/1 - Cap.	Kb0 - D0
Sym	- 9/2 - Z	Kb1 - D1
M	- 8/3 - X	Kb2 - D2
N	- 7/4 - C	Kb3 - D3
O	- 6/5 - V	Kb4 - D4

Will not Read the Cassette Recorder

C) The cassette input view from CPU is the same port as the keyboard, but in the D6 bit. All we need to do, is amplify the audio input, decode the 254 ports and couple it to D6 . Then the "dead" cassette comes to work. The circuit is:



EXTRA: Like some TSs are more deaf than others, and in general all are "hard" to hear (Sure, I designed, sold, and made money with a signal improver, LG-02). In the cassette input, Timex put only two diodes to ground CR25/26 (I don't know why, only two), for bias the input of SCLD circuit, to protect the input electronics, and to conform the input signal. The solution I encountered was to add one diode in series between them. Commonly I de-soldered one end of one diode and add one more between it and the hole in the board, remember in the same polarity direction. Conclusion: with the three diodes my TS became an excellent machine.



D) The refresh problem was hard to find in the beginning, but with an oscilloscope and understanding of memory and Z80 devices, finally I win. The TMS 4416 was a new chip when it was used in the design of the TS-2068. And has been the Z80 best 8 bits micro, than it has inside, the refresh counter necessary to maintain the data in the dynamic memories, the combination was perfect. But when it was designed, only seven bits were used for this counter. It is O.K. for 4116, 4164 family (it needs only seven bits to refresh all cells), but in the "new" 4416 family eight bit was needed. In the low memory block, constantly reading to form the video, it makes the necessary refresh reading. But in the high memory block the SCLD makes the eight bit necessary for a complete refresh cycle (the A7R). When it fails, the machine can't maintain its data integrity and crashes.

The first thing to do is to confirm that the problem is this, I made a little program that displays this problem in the form of lost UDG data, simply making all bits set in UDG, the lost information are seen like white dots inside them.

First input this program line:

```
10 PRINT "ABCDEFGHIJKLMNOPQRSTU"
```

(all letters in UDG mode)

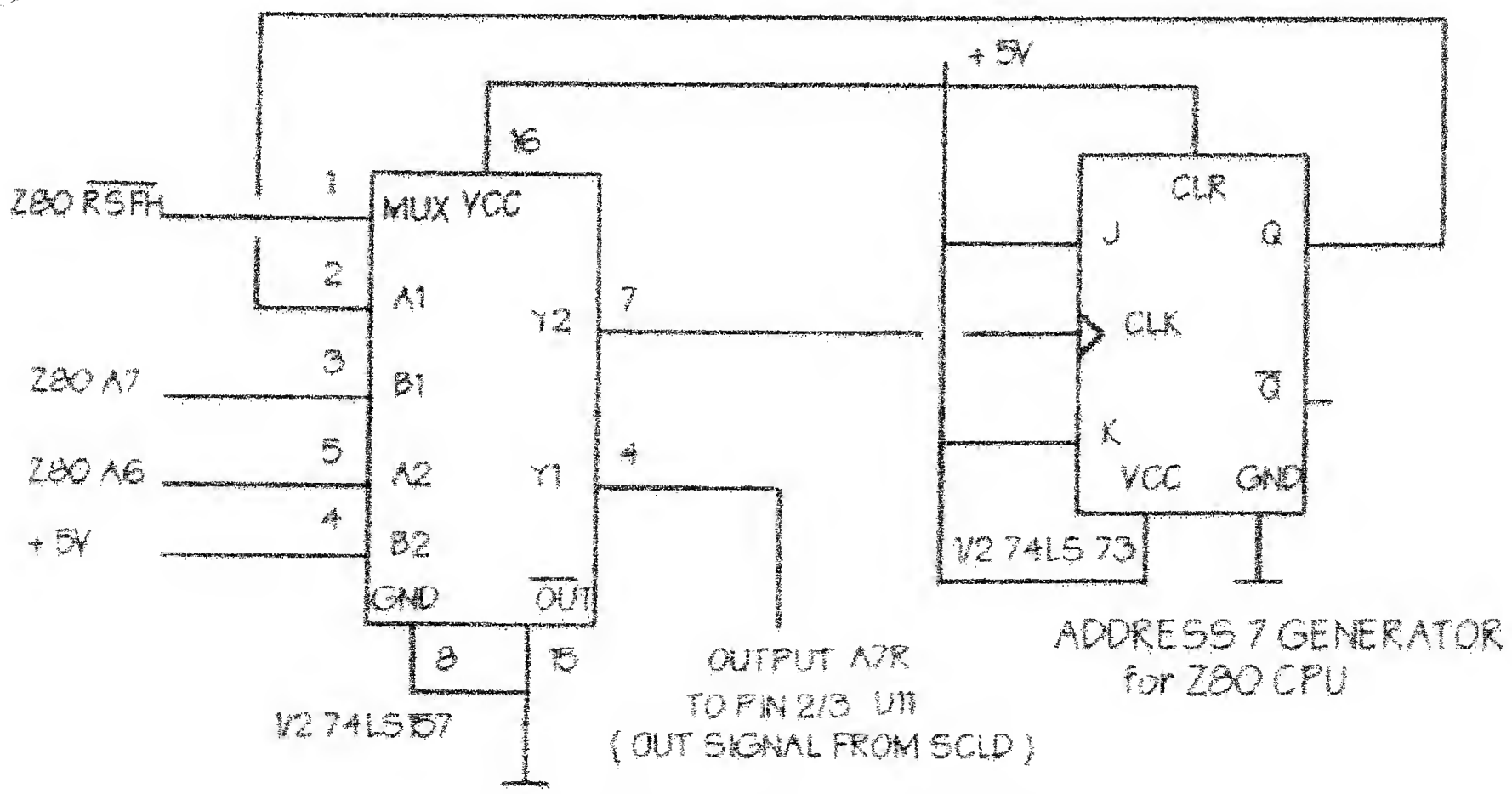
Then input this command line:

```
FOR A = UDG "A" TO UDG "U" : POKE A,255: NEXT A
```

(ENTER & RUN)

Now all letters must be black boxes, and in the upper left side of the screen, you can see a coarse black line, 21 characters long. Every time you type RUN and ENTER you refresh the display area, taking the UDG information from its original address (high memory block). Running a program every minute if you can see how the white spots start to appear, your machine has the refresh problem .

Second build and install the next circuit:



The circuits given represent hours of high tech research, they are copyrighted to my mind. I send them to you for a help in your troubles, (and for my TS's USA folks, of course). You should not use them commercially without my acceptance except for repairs.

QL Hacker's Journal

Supporting All QL Programmers #34 December 2001

The QL Hacker's Journal (QHJ) is published by Tim Swenson as a service to the QL Community. The QHJ is freely distributable. Past issues are available on disk, via e-mail, or via the Anon-FTP server, garbo.uwasa.fi. The QHJ is always on the look out for article submissions.

QL Hacker's Journal
c/o Tim Swenson
2455 Medallion Dr.
Union City, CA 94587
swensont@lanset.com
http://www.geocities.com/SiliconValley/Pines/5865/

Editor's Forum

For the second time in the life of the QHJ, I have allowed a whole year to go between issues. When I started the QHJ 10 years ago, I knew something like this might happen, therefore I made the QHJ a free publication. This has kept any off any outside pressure to get the next issue out. I really only have to deal with my own pressure. I think we all have cycles of dedication to projects Sometimes when we start a project we can't put it down, other times we can't pick it up. For the last year I really have not had the drive to do some programming. Other tasks have filled my time and interest. Even with some forced time off from work (yea, I'm one of the victims of the failed new economy), I have not really spent time doing programming work.

But, I have found the time to brush off an old issue that I've been working on for almost 9 months. I took the time to sit down and finish it. This issue focuses on freeware release of TURBO, the SuperBasic compiler. I've been involved with the release by editing the manuals for both TURBO and the TURBO Toolkit.

Remembering hearing about the possible re-release of TURBO in QL Today back in early 2000. At the QL 2000 show in October 2000, I happened to run across George Gwilt. I asked him about TURBO and hinted that I'd like to get a copy, if possible. Soon I had TURBO and George's Pointer Environment TURBO Kit, TurboPTR. Not being a previous TURBO user, I needed a manual to figure out how to use it.

Simon Goodwin send me his original manuals, which I edited to reflect the new TURBO. I plan to use TURBO for all my programming projects. I'm hoping that a totally freeware SuperBasic development package (TURBO, TURBO Toolkit, TURBO Config, and TurboPTR) will encourage a more QLer's to start programming (kind of like what C68 did for C programming on the QL). As of this issue, I plan to make the QHJ an electronic only publication and sent out a print copy. This pretty much only affects the US readers, as I sent very few issues outside the US. I believe that most readers have a way to access the QHJ via web or e-mail

Turbo Compiler

TURBO, the SuperBasic compiler, has been updated and released for almost a year Simon Goodwin is the original author with a few others contributing to the final released product, by Digital Precision. George Gwilt has taken the source code and updated the program to work on the newer QDOS and SMSQ/E systems

TURBO comes in the following packages:

- TURBO Toolkit 3.31
- TURBO 4.10
- TURBO and TURBO ToolKit manuals
- TURBO Config
- TurboPTR
- TURBO Utilities
- Task Commander

TURBO Toolkit (TTK) has been updated by Mark Knight and must be loaded for TURBO to run The manuals for TURBO and TURBO Toolkit have been updated to reflect the new versions. TURBO Config and TurboPTR are new tools written by George Gwilt. TURBO Utilities is a collection of tools for use with TURBO compiled programs. Task Commander is a tool that allows a TURBO compiled program to become a KEYWORD.

Like Qliberator, TURBO compiles off a program already loaded into SuperBasic. Unlike Qlib, a work file does not need to be created first.

TURBO is comprised of two parts, the parser and the code generator. They are two separate executables, but are linked when using the CHARGE TTK keyword. The parser has the main user interface to TURBO. In the parser the user can change various compile options, including where the destination executable will go and the runtime name of the executable (as displayed by the JOBS command).

A lot of the compile options can be set within the SuperBasic program itself, using TTK keywords starting with TURBO_, like TURBO_taskn, TURBO_buffersz, TURBO_objfil, and TURBO_repfil. Other commands like IMPLICIT$ and IMPLICIT% inform TURBO how to treat variables. 'IMPLICIT% var1, var2' tells TURBO to treat these variables as integer variables (var1%, var2%). By default, SuperBasic variables are treated as floating point, but TURBO knows that most variables do not need to be floating point and that most programmers do not take the time to use the percent sign in their programs. The IMPLICIT% allows the programmer to continue to not use the percent sign, but tells TURBO to handle the variable as an integer, thereby saving space (integers are smaller than floats) and runtime.

Major Differences with Qlib

1 - No Linking of Extensions (Toolkits)

TURBO does not support the linking of SuperBasic extensions into an executable. With Qlib, the extension can be linked and become part of the executable. The major reason for doing this is to include commercial extensions (like Qmenu, and QPTR), into an executable without having to distribute the extension separately. If an extension has to be distributed separately, then a license fee is usually required by the owner of the extension.

It is also done not to require that an extension is loaded before the executable is run. If you have an extension that you think the user will rarely use and not want to install, linking into the executable makes it transparent to the user

The downside is that if the extension gets updated, then the older version will stay in the executable. Keeping the extension out of the executable will allow the extension to be updated and not require a recompile. Some older QL programs are rendered inoperable due to an older extension clashing with SMSQ/E.

2 - Fussier about SuperBasic

Qlib can compile almost any SuperBasic that would run on the QL. TURBO is fussier about what SuperBasic code it will compile.

An example is how file names are used. In SuperBasic a file name does not need to have quotes around it. In TURBO, they are needed.

Qlib - open #3,win1_file_ext

TURBO - open #3,'win1_file_ext'

Plus TURBO has a number of keywords (from TURBO Toolkit) that help TURBO know more about the application. They have a tendency to give the program a more TURBO feel. With Qlib, any compiler directives are put in REMark statements and not using keywords

3 - Executable Speed

The major benefit that TURBO has over Qlib, is that resultant executable is faster than one compiled by Qlib. I had no first hand knowledge of this difference so I decided to compile a program with both Qlib and TURBO and compile the time it took to run the program. For the test I used the Ratcliff/Obershelp Pattern Matching algorithm as listed in QHJ #1. The main function is percent_alike(). The program I wrote called the function 1000 times, using the arguments of Pennsylvania and Pencilvania. Since I was using a Q40 as a test machine, I needed the program to run long enough to give me some meaningful numbers. 1000 times turned out to be long enough.

Here is a table of the results:

SBASIC	12 secs.
Qlib	8 secs.
TURBO	5 secs.

The test program is below:

```
100 LET x = DATE
110 OPEN #3,scr_100x100a100x100
120 BORDER #3,2,2: INK #3,4: PAPER
#3,0 : CLS #3
130 FOR 1 = 1 to 1000 140 LET
wordpercent                    =
percent_alike("pennsylvania",
"pencilvaneya")
150 END FOR 1
160 LET y = DATE
170 PRINT #3,"Time : ";y-x
180 FOR z = 1 TO 4000 : LET test =
COS(z) : END FOR z
190 CLOSE #3
200          DEFine          FuNction
percent_alike(a$,b$)
210   LOCal total
220   total = num_alike(a$,b$)
230            RETURN              int(
total/(LEN(a$)+LEN(b$))*100)
240 END DEFine percent_alike
250 DEFine FuNction num_alike (a$,
b$)
260    LOCal total, temp$, a1, a2,
b1, b2, large$
270   total = 0
280       IF  a$=b$  THEN  RETURN
LEN(a$)*2
290    IF LEN(a$)=1 AND LEN(b$)=1
THEN RETURN 0
300   IF LEN(a$) > LEN(b$) THEN
310      temp$ = a$
320      a$ = b$
330      b$ = temp$
```

```
340     ENDIF
350      IF LEN(a$)=1 THEN RETURN (a$
INSTR b$)
360 large$ = find_gt_com$ (a$, b$)
370     IF large$ = "" THEN RETURN 0
380     length = LEN(large$)
390     total = length*2
400      a1 = large$ INSTR a$
410      a2 = a1 + length
420      b1 = large$ INSTR b$
430      b2 = b1 + length
440      IF (a1>1) OR (b1>1) THEN
450     total = total+num_alike (a$(1
TO (a1-1)), b$(1 TO (b1-1)))
460     ENDIF
470      IF     (a2<>LEN(a$)+1)     OR
(b2<>LEN(b$)+1) THEN
480   total = total+num_alike (a$(a2
TO), b$(b2 TO))
490     ENDIF
500     RETURN total
510 END DEFine percent_alike
520   DEFine  FuNction  find_gt_com$
(a$, b$)
530 LOCAL temp$, i, j, temp, large$
540     IF LEN(a$) > LEN(b$) THEN
550        temp$ = a$
560        a$ = b$
570        b$ = temp$
580     ENDIF
590     LET large$=""
600     FOR i = 1 TO LEN(a$)
610       FOR j = i TO LEN(a$)
620        temp = a$(i TO j) INSTR b$
630  IF  (temp<>0)  AND  (LEN(a$(i  TO
j))>LEN(large$))    THEN  large$=a$(i
to j)
640         END FOR j
650      END FOR i
660      RETURN large$
670 END DEFINE find_gt_com
```

In general, using TURBO takes a little more work than using Qliberator. Both can compile simple programs without any changes. TURBO gives the programmer a little more control over the end product with a variety of commands that control how the executable is compiled. The end result is that TURBO is more powerful than Qliberator, but the power comes at the price of needing to know more about TURBO to get to that power.

The TURBO manuals do a pretty good job of documenting TURBO and the use of the various TURBO Toolkit commands. In some places it does go into a little too much detail for the average programmer.

Converting from Qlib to TURBO can take time and be a little painful. For some there may not be a need to convert over, as QLib may be working just fine for them. But, as TURBO keeps being updated, the Qlib user may hit a problem with Qlib on newer platforms. Plus, I think there is an advantage to using a freeware compiler.

Turbo Config

TURBO does not support standard Qjump Config Blocks. George Gwilt has created TURBO Config, a tool that allows Config blocks to be added to TURBO compiled programs. After creating some data statements that get merged with the source code, another tool takes the Config block information and adds it to the compiled program.

T_CONFIG_DATA is the program that takes your Config bock definition and creates two files. The first is the data statements with dummy data holders The second file is the actual data that will be put into the Config block. T_CONFIG_LOAD is the program that takes the Config block data and puts it into the compiled program.

The process goes something like this:

- Write your program.
- Use T_CONFIG_DATA to create the DATA statements and to define the data.
- Merge the DATA statements with your program.
- Compile the program.
- Use T_CONFIG_LOAD to load the Config block data into the executable.

The Config block data is read by using READ statements and selecting the right item by using RESTORE statements. Due to the way strings are stored, they must be read twice, with the second read getting the real string. Below is an example:

```
10 RESTORE 1000
20 READ int1
30 READ int2
40 RESTORE 1004
50 READ string1$ : READ string1$
60 RESOTRE 1006
70 READ string2$ : READ string2$
100 PRINT "Int #1: ";int1
110 PRINT "Int #2: ";int2
120 PRINT "String #1: ";string1$
130 PRINT "String #2: ";string2$
140 STOP
998         DATA          "$'#*","ctest
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
```

```
1000 DATA -4444: REMark First Integer
1002 DATA -4444: REMark Second Integer
1004 DATA "XX","00000000000"
1006 DATA "XX","11111111111"
TurboPTR
```

TURBO is not compatible with all SuperBasic extensions, esp. those with array parameters or return values through parameters. QPTR is one such set of extensions. So, to create Pointer Environment programs using TURBO, George Gwilt has written TurboPTR, which is a freeware replacement to QPTR.

TurboPTR is comprised of the following elements:

TPTR - a set of extensions
TPTR_BAS - a set of SuperBasic routines that get merged with your program.
TPTR_SETF.TASK - a program that helps setup the window definitions (inc. sprites and such).

TurboPRT also comes with some example sprites and three examples programs.

I'm not a PE programmer so I can't say much about TurboPTR other than I hope to find the time to try it out.

Task Commander

Task Commander is a utility that will convert a TURBO compiled program into a resident extension or Toolkit, that can be RESPRed and seen as a new keyword in SuperBacis.

Task Commander will produce a keyword that will produce the same effect as EXEC or EX. Task Commander is not designed for creating library extension with many keywords. The program is fairly simple and only does this one thing. Documentation comes with the program that quickly explains how to use the program and even how it works.

Turbo Utilities

Another zip file contains a number of other TURBO utilities: LIBRARY MANAGER, DATASPACE and Utility_Task

The zip file does not come with documentation, and briefly explains the programs:

LIBRARY MANAGER - pulls out procedures from large SuperBasic programs.

DATASPACE - used to adjust the data space requirements in programs already compiled

Utility_task - Neat little utility program that does three things:

Charager Graphics Editor, Sound Effects Editor, and Toolkit Default Editor.

Turbo Support Page

To assist in the support of TURBO, I've created a TURBO Support Page on my web page The page will list the various reported bugs to both TURBO and TURBO Toolkit. Each bug will list what it is, what platform the bug has been seen on (QDOS, SMSQ/E, etc), and the status of work on the bug. Using this page should take some work off of George Gwilt and leave him to concentrate on actually fixing bugs.

My web page is:
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NESQLUG

New England Sinclair QL Users Group
Ed Kingsley, Editor
16 Highland Avenue
Saugus MA 01906
(781) 233-3671 EdK4@aol.com

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Phone 212 631-7563
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Domino.cubes@excelsior.net

QL Hacker's Journal

Supporting All QL Programmers

Timothy Swenson, *Editor*
2455 Medallion Dr.
Union City, CA 94587-1914
swensontc@geocities.com
http://www.geocities.com/SilconValley/Pines/5865/

ZX-TEAM MAGAZIN

Peter Liebert-Adelt
LUETZOW STR 3
D-38102 BRAUNSCHWEIG
GERMANY
Email: p.liebert@t-online.de
http://home.t-online.de/home/p.liebert/zx-team.htm
Amateur Radio: DK4BF@DB0FC.#NDS.DEU.EU

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QL Today is published by Jochen Merz Software. The representative in Britain is Miracle Systems Ltd.
English Office
Miracle Systems Ltd.
20 Mow Barton
Yates, Bristol, UK BS17 5NF
Editor
Dilwyn Jones
41 Bro Emrys
Tal-Y-Bont, Bangor, Gwynedd, UK LL57 3YT

Zebra Systems, Inc.

122 W26th St. Suite. 904
New York, NY 10001
Basics of Timex Sinclair 1500/1000 BASIC
BASIC Basics for the Timex/Sinclair 1500/1000
Computer Interfacing Technique in Science TS-1500/1000

Surplus T/S Inventory

JOHN J SHEPARD III
281 130th ST
OGDEN IA 50212
< jshepard@wccta.net >
Mostly QL & TS-2068

JACK BOATWRIGHT
67325 FRYREAR RD
BEND OR 97701
< jboatno4@outlawnet.com >
Mostly ZX-81/TS-1000 & TS-2068

QL TS-2068 ZX-81

Software

SINCLAIR E-MAIL LIST

Anderson, Paul	pandersu@peakpeak.com
Anson, Gerald	jerrya@aztec.asu.edu
Barker Robin	robin@di-ren.demon.co.uk
Bennett, Dave	dave975@att.net
Boatwright, Jack	jboatno4@outlawnet.com
Boehm, Al	albertboehm@juno.com
Boehm, Bill	boehm@plh.af.mil
Burrell, Jeff	jburrell@endocardial.com
Cable, Bill	cable@cyberportal.net
Carpio, Juan	juanchuscar@yahoo.com
Castro Antonio	castrox@portoweb.com.br
Catotti, Christopher	kd4ace@compuserve.com
Chambers, George	gfchamb@pathcom.com
Collins, Bill	bcollins@home.ifx.net
Cottrell, Les	jacottrell@cfl rr.com
Cruz-Figueroa, Jaime	cruzfiguer@aol.com
Dansby, Andrew	adansby@atlantic.net
Davis, Frank	fdavis@iquest.net
Delhez, Carlo	carlo@spase.nl
Donaldson, John	goodolejohn@avenew.com
Dorinson, Mark	74200.257@compuserve.com
Dunbar, Douglas	dldunbar@prodigy.net
DuPuy, James	dupuy@pipeline.com
Encarnado, João	timex.pt@mail.telepac.pt
England, William	wengland@iname.com
Fegley, Ruth	qlruth@hotmail.com
Feng, Al	alfeng@juno.com
Fink, Mike	domino.cubes@excelsior.net
Fink, Mike	domino.cubes@pointblank.com
Firshman, Tony	tony@firshman.demon.co.uk
Florit, Louis	florit@unixville.com
Franke, John	j.m.franke@larc.nasa.gov
Ganger, Gary	gangerg@dnaa.org
Gilbert, Robert	weena@netzero.net
Gillespie, Doug	aa431@cleveland.freenet.edu
Girnius, William	girnius_w@bls.gov
Goodwin, Glen	glenatacme@aol.com
Gowen, Rod	aw723@osfn.org
Haberly, Duncan	duncan@military.com
Haberly, Duncan	duncan@military.com
Harbit, Ken	krh03@cvip.fresno.com
Harris, Paul	plh@frsl5.f9.co.uk
Henderlight, Mike	mikehend@microsoft.com
Herre, Cy	Cyherre@aol.com
Holmgren, Paul	paulholm@indy.net
Horton, Will	willhort@aol.com
Hoshor, Dave	dnhoshor@raex.com
Humphreys, Rod	rodh@pacificcoast.net
Impellizerri, John	jimpellizerri@compuserve.com
Jaap, Matthias	matthias_Jaap@lihs.lih.schule.de
Jonas, Mike	mjonas@bbn.com
Jones, Dilwyn	dilwyn.jones@dj.softnet.co.uk
Jones, Terry	tjones@iname.com
Kaczor, Jon	jazkaczor@aol.com

Kahale, Abed	akahale@juno.com
Kealy, Harriet Joan	hjkealy@rionet.org
Kenny, Larry	larken@storm.ca
Kingsley, Ed	edk4@aol.com
Knyszek, Theodore	thirteenth@worldnet.att.net
Kondrac, Mike	mkandrac@aol.com
König, Urs	urs.koenig@agrodata.ch
Kwitkowski, Phillip	pkwitkowski@hotmail.com
Lambert, Donald	dslambert@emailmsn.com
Lancaster, Garry	dharkhig@delphi.com
Lanciault, Francois	francois.lanciault@energies.alstom.ca
LaVerne, Melvin	mlaverne@usit.net
Lebowitz, Dave	dkl@dpliv.com
Lessenberry, Gary	gl743@aol.com
Fegley, Ruth	ruth.fegley@worldnet.att.net
Liebert-Adelt, Peter	Peter@zx81.de
Liebert-Adelt, Peter	p.liebert@t-online.de
Malloy, Bob	74776.2342@compuserve.com
Matthias, Jaap	mjaap@atari-computer.de
McBrine, William	wmcbrine@clark.net
McKelvey, William	mckelveyw@delphi.com
Merz, Jochen	jmerz@t-online.de
Mikolajczyk, Dean	deanm97493@aol.com
Miller, Seymour	seymil@delphi.com
Mills, Frank	effem417@yahoo.com
Muth, Bob	bobkeeper1@aol.com
Norton, Gary	gnorton@rsacc.net
Norton, Gary	gnorton@world.std.com
Parrish, Gil	gil.parrish@abanet.org
Pashtoon, Nazir	nazir.pashtoon@ingram.micro.com
Payne, Josh	joshpayne@bigfoot.com
Pazmino, John	john.pazmino@moondog.com
Perry, Luke	Doidy1@juno.com
Perry, Russ Jr	slapdash@enteract.com
Rampolla, Joe	jprampolla@blazenet.net
Rigter, Wilf	wilf.rigter@powertechlabs.com
Rish, John	74601.1535@compuserve.com
Shepard, Jay	jshepard@wccta.net
Simon, Thomas	73177.333@compuserve.com
Skapinski, Thomas	tskapins@juno.com
Solly, David	k_david_solly@hotmail.com
Stegman, Dan	danesteg@juno.com
Swenson, Tim	swensont@lanset.com
Swentko, Wally	wswentko@maroon.tc.umn.edu
Swoger, Robert	rswoger@aol.com
Taylor, Jeff	jetaylor@mdrobotics.ca
TEJ Computer	tej@jps.net
Thoresen, Jeff	74200.257@compuserve.com
Waldman, Stephen	brogine@hotmail.com
Walterman, Don	walterm@ix.netcom.com
Watson, Keith	keith_watson@juno.com
Webster, Robert	rwebs1@netzero.net
Zimmerman, George	gzimmer928@aol.com
Bill McKelvey	mckelveyw@delphi.com

First Look at

Timex/Sinclair's New Color Computer

The T/S 2068 is an "under-$200" basic computer offering many features missing on the 1000

By Fred Blechman

THE new Timex Sinclair 2068 Personal Color Computer is much different than the computer originally announced at a trade show in January 1983 as the "Timex Sinclair 2000." The computer has gone through a great metamorphosis. Those of you having Timex 1000s will find that the things [illegible] membrane

$148.32. Although in June, a T/S 2048 was also announced (with 16K RAM instead of 48K, and for $50 less), it appears that only the T/S 2068 will be available at this time.

This report is based on a pre-produc-

Most of the keys do multiple duty, since single-keyword entry is provided for over 150 BASIC commands and statements. Most keys perform five different functions, while seven keys have six functions. Functions are identified by one of six different letters that appear within the block cursor.

Eight of the keys directly provide 16